

Remarks

The present invention relates to a modular drive unit for attachment to a preexisting gurney which is designed to be manually pushed. In many medical facilities, there is a shortage of nurses and orderlies and, with an aging population, more gurneys to push. When loaded with a patient and supporting medical equipment, a manually-propelled gurney is unwieldy. Not infrequently, however, the task is left to just one person and gurney-related injuries of nurses and orderlies are not uncommon. There are motorized gurneys but there are many more gurneys that are not motorized.

Two of the patents cited by the Examiner (U.S. patent No. 6,588,523 to Heimbrock et al. and U.S. patent No. 6,752,224 to Hopper et al.) are examples of prior art motorized gurneys. The patents are discussed below in connection with applicant's claims but, in general, describe drive mechanisms that are complicated, expensive and specifically designed to fit a particular gurney. Whereas the benefit of applicant's drive module unit is that it may be used to convert any manually operated gurney into a motorized unit.

In a previous action, applicant's claims 23-96 were withdrawn from further consideration pending the allowance of a generic or linking claim. Applicant timely traversed the restriction (election) requirement.

In the outstanding Office action, claims 1-22 were rejected as being unpatentable over Heimbrock et. al. (U.S. patent No. 6,588,523) in view of Nowell et al. (U.S. patent No. 5,765,859) and Hopper et al. (U.S. patent No. 6,752,224).

In response to the subject Office action, claim 1 has been amended to include features originally found in the dependent claims, in particular claims 11-14. One important change is that claim 1 has been amended to include the term "air bag." The term air bag is more limited than "air spring." The term "air spring" encompasses both air cylinders and air bags. Applicant's air bag is connected to an air compressor through an air pressure switch which controls the pressure in the air bag.

Figs. 9A and 9B show the operation of applicant's drive:

As shown in the drawings, the drive wheel (390) in applicant's drive module is mounted for rotation between pivot arms (320). The pivot arms (320) are supported between a pair of brackets (312) that through intermediate means are attached to the chassis of a gurney. The pivot arms (320) pivot on a pivot (324) between brackets (312). The drive wheel (390) is driven by an electric motor. The motor may be a hub motor or a gear motor.

An air bag (350) and a spring (360) work against each other on the pivot arms (320). As shown in Fig. 9A, when air bag (350) is deflated, coil spring 360 (illustrated as a compression spring) biases pivot arms (320) such that drive wheel (390) is lifted out of contact with the supporting surface. When air bag (350) is inflated as shown in Fig. 9B, coil spring 360 is further compressed and pivot arms (320) are rotated counterclockwise (as viewed in the figure) placing drive wheel (390) in contact with the supporting surface. By varying the pressure on air bag (350), drive wheel (390) may be pressed against the supporting surface with sufficient force that it does not slip on the surface and may be used to propel the gurney forwards or backwards.

Analysis of the Rejection

As correctly stated by the examiner, Heimbrock et al. and Hopper et al. disclose a drive module with a retractable drive wheel but in each instance the drive module is specially adapted for use on a particular gurney. Heimbrock et al. is cited

as showing "pneumatic air spring 222." As best seen in Fig. 5, the air spring shown in Heimbrock et al. is an air cylinder, not an air bag, and is not connected to a compressor. Air spring 222 is a gas strut used to compensate for uneven surfaces. Gas strut 222 is connected to a worm screw that is used to push the wheel into contact with the ground. In contrast, applicant's drive module as claimed requires the use of an air bag which is used in combination with a spring to pivot the drive wheel in and out of contact with the supporting surface. For the purpose of pivoting the pivot arms in applicant's construction, an air cylinder is not functionally equivalent to an air bag connected to a compressor under control of an air pressure switch. The pressure exerted by an air cylinder is fixed whereas the pressure exerted by an air bag can be varied such that it can pivot the pivot arms that carry the drive wheel. It is believed that Heimbrock et al. neither teaches nor suggests an air bag or the above-mentioned arrangement of the elements.

Nowell et al. was cited as showing a retractable drive module for adjusting the distance of the drive wheel. It is believed that this characterization is in error. Nowell et al. shows a trailer that can kneel. To accomplish this, the frame is movable up and down with respect to the ground and with respect to the wheels. The wheels however do not move up and down.


More particularly, wheel 230 is mounted on a spindle 220. Spindle 220 is attached to an air bag 170 operated linkage that moves the frame of the trailer up

and down with respect to the spindle. As shown in Figs. 4 and 5, wheels 230 are mounted on spindle 220 (misnamed a lock plate in the Office action). Wheels 230 as shown in Figs. 4 and 5 are in contact with the ground at all times and the distance of wheels 230 with respect to the ground does not change. With this understanding of the reference, it is seen that Nowell et al. does not teach or suggest a retractable drive module in the sense of applicant's claims.

In view of the above amendments and remarks, it is believed that the claims are in condition for allowance. Reconsideration of the application and allowance of the claims are respectfully requested.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 15, 2006.



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